

This document gives pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a minor, municipal permit. The discharge results from the operation of a 0.0063 MGD wastewater treatment plant. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-05 et seq.

1. Facility Name and Mailing Address: Arcola Montessori School & Daycare WWTP
4139 Cannongate Drive, S.W.
Leesburg, VA 20175
SIC Code: 4952 WWTP
Facility Location: 24328 Goshen Road
Aldie, VA 20105
County: Loudoun
Facility Contact Name: David M. Gregory
Telephone Number: 703-969-2230
2. Permit No.: VA0021733
Current Expiration Date: 28 December 2007
Other VPDES Permits: N/A
Other Permits: N/A
E2/E3/E4 Status: N/A
3. Owner Name: Church Road, Limited and 350 South Washington, L.L.C.
Owner Contact/Title: David M. Gregory
President of Church Road, Limited
Manager of 350 South Washington, L.L.C.
Telephone Number: 703-969-2230
4. Application Complete Date: 21 August 2007
Permit Drafted By: Douglas Frasier
Date Drafted: 18 September 2007
Draft Permit Reviewed By: Alison Thompson
Date Reviewed: 28 September 2007
Public Comment Period: Start Date: 1 November 2007
End Date: 4 December 2007
5. Receiving Waters Information: See **Attachment 1** for the Flow Frequency Determination
Receiving Stream Name: South Fork Broad Run
Drainage Area at Outfall: 2.96 square miles
River Mile: 2.48
Stream Basin: Potomac
Subbasin: Lower Potomac
Section: 09
Stream Class: III
Special Standards: None
Waterbody ID: VAN-A09R
7Q10 Low Flow: 0.00 MGD
7Q10 High Flow: 0.03 MGD
1Q10 Low Flow: 0.00 MGD
1Q10 High Flow: 0.02 MGD
Harmonic Mean Flow: 0.00 MGD
30Q5 Flow: 0.00 MGD
303(d) Listed: No
30Q10 Flow: 0.00 MGD
TMDL Approved: No
Date TMDL Approved: N/A
6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

<div style="margin-bottom: 5px;"><input checked="" type="checkbox"/> State Water Control Law</div> <div style="margin-bottom: 5px;"><input checked="" type="checkbox"/> Clean Water Act</div> <div style="margin-bottom: 5px;"><input checked="" type="checkbox"/> VPDES Permit Regulation</div> <div style="margin-bottom: 5px;"><input checked="" type="checkbox"/> EPA NPDES Regulation</div>	<div style="margin-bottom: 5px;"><input type="checkbox"/> EPA Guidelines</div> <div style="margin-bottom: 5px;"><input checked="" type="checkbox"/> Water Quality Standards</div> <div style="margin-bottom: 5px;"><input checked="" type="checkbox"/> Other: Stream Model</div>
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7. Licensed Operator Requirements: Class IV
8. Reliability Class: Class II

9. Permit Characterization:

<input checked="" type="checkbox"/> Private	<input checked="" type="checkbox"/> Effluent Limited	<input type="checkbox"/> Possible Interstate Effect
<input type="checkbox"/> Federal	<input checked="" type="checkbox"/> Water Quality Limited	<input type="checkbox"/> Compliance Schedule Required
<input type="checkbox"/> State	<input type="checkbox"/> Toxics Monitoring Program Required	<input type="checkbox"/> Interim Limits in Permit
<input type="checkbox"/> POTW	<input type="checkbox"/> Pretreatment Program Required	<input type="checkbox"/> Interim Limits in Other Document
<input type="checkbox"/> TMDL		

10. Wastewater Sources and Treatment Description:

The treatment system consists of a septic tank, rotation arm sand filter, polishing lagoon, chlorination and dechlorination. The final effluent then flows through an underground pipe approximately 0.4 miles before discharging into the South Fork of Broad Run.

Facility is slated to close during this permit cycle.

See **Attachment 2** for a facility schematic/diagram.

TABLE 1 – Outfall Description				
Outfall Number	Discharge Sources	Treatment	Design Flow	Outfall Latitude and Longitude
001	Domestic Wastewater	See Item 10 above.	0.0063 MGD	38° 56' 22" N 77° 33' 24" W
See Attachment 3 for topographic map.				

11. Sludge Treatment and Disposal Methods:

The facility does not generate sewage sludge. Septage from the septic tank is pumped and hauled by a permitted contractor as needed and taken to an approved Loudoun County Sanitation Authority trunk line to Blue Plains WWTP for final treatment and disposal.

12. Discharges, Intakes, Monitoring Stations, Other Items in Vicinity of Discharge:

TABLE 2	
1ASOR002.99	DEQ Monitoring Station located at Route 616.

13. Material Storage:

TABLE 3 - Material Storage		
Materials Description	Volume Stored	Spill/Stormwater Prevention Measures
Hypochlorite	2 gallons	Under roof
Dechlorination Tablets	Two buckets	Under roof

14. Site Inspection: Performed by Sharon Mack and Douglas Frasier on 21 August 2007 (see **Attachment 4**).

15. Receiving Stream Water Quality and Water Quality Standards:a). Ambient Water Quality Data

The Department of Environmental Quality ambient monitoring has not shown any impairment for the receiving stream. There are downstream impairments due to exceedences of the water quality criterion for polychlorinated biphenyls (PCBs), heptachlor epoxide, arsenic and mercury based on fish tissue samples. The TMDL has a due date of 2018. The receiving stream will not be included since it is not listed as impaired. However, the facility may be given a WLA since all upstream facilities will be considered in the TMDL (**Attachment 5**).

b). Receiving Stream Water Quality Criteria

Part IX of 9 VAC 25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream South Fork Broad Run is located within Section 9 of the Potomac River Basin and is classified as Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C and maintain a pH of 6.0-9.0 standard units (S.U.).

Attachment 6 details other water quality criteria applicable to the receiving stream.

Ammonia:

Staff has re-evaluated the effluent data for pH and finds no significant differences from the data used to establish ammonia criteria and subsequent effluent limits in the previous permit. A default temperature value of 25°C will be used again since there is no effluent temperature data. Therefore, the previously established criteria will be carried forward as part of this reissuance process.

Bacteria Criteria:

The Virginia Water Quality Standards (9 VAC 25-260-170 B.) states sewage discharges shall be disinfected to achieve the following criteria:

E. coli bacteria per 100 mL of water shall not exceed the following:

	Geometric Mean ¹	Single Sample Maximum
Freshwater <i>E. coli</i> (N/100 mL)	126	235

¹For two or more samples taken during any calendar month.

c). Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9 VAC 25-260-360, 370 and 380) designates the river basins, sections, classes and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, South Fork Broad Run, is located within Section 9 of the Potomac River Basin. This section has not been designated with a special standard.

d). Threatened or Endangered Species

The Virginia DGIF Fish and Wildlife Information System Database was searched for records to determine if there are threatened or endangered species in the vicinity of the discharge. The following threatened or endangered species were identified within a 2 mile radius of the discharge: Henslows Sparrow (song bird). The limits proposed in this draft permit are protective of the Virginia Water Quality Standards and therefore, protect the threatened and endangered species found near the discharge.

16. Antidegradation (9 VAC 25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream has been classified as Tier 1 based on the fact that the critical flows 7Q10 and 1Q10 have been determined to be zero. Permit limits proposed have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points are equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA s) are calculated. In this case since the critical flows 7Q10 and 1Q10 have been determined to be zero, the WLAs are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

a). Effluent Screening

Effluent data were reviewed and there have been no exceedances of the established limitations.

b). Mixing Zones and Wasteload Allocations (WLAs)

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o [Q_e + (f)(Q_s)] - [(C_s)(f)(Q_s)]}{Q_e}$$

Where:

WLA	=	Wasteload allocation
C _o	=	In-stream water quality criteria
Q _e	=	Design flow
Q _s	=	Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; harmonic mean for carcinogen-human health criteria; 30Q10 for ammonia criteria; and 30Q5 for non-carcinogen human health criteria)
f	=	Decimal fraction of critical flow
C _s	=	Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 is considered to have a 7Q10 and 1Q10 of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the C_o.

c). Effluent Limitations Toxic Pollutants, Outfall 001

9 VAC 25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9 VAC 25-31-230.D. requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N/TKN:

Staff evaluated the new effluent data and has concluded it is not significantly different than what was used to derive the existing ammonia limits (**Attachment 7**). Therefore, the existing ammonia limitations are proposed to continue in the reissued permit.

It should be noted this facility does not discharge continuously; rather, it is intermittent due to the characteristics of the source (day-care) and the treatment processes. DEQ guidance recommends that only the acute criteria be evaluated for non-continuous operations. However, based on staff's best professional judgement, there may be periods of poor mixing due to low or no flow conditions in the receiving stream, which may produce pooled areas comprised entirely of effluent. To protect the receiving stream and any aquatic life present, staff used both acute and chronic waste load allocations; subsequently, applying the most stringent.

2) Total Residual Chlorine:

Chlorine is used for disinfection and is potentially in the discharge. Staff calculated WLAs for TRC using current critical flows and the mixing allowance. In accordance with current DEQ guidance, staff used a default data point of 0.2 mg/L and the calculated WLAs to derive limits. A monthly average of 0.008 mg/L and a weekly average limit of 0.010 mg/L are proposed for this discharge (see **Attachment 8**).

d). Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

No changes to Dissolved Oxygen (D.O.), Biochemical Oxygen Demand-5 day (BOD₅), Total Suspended Solids (TSS), Ammonia as N and pH limitations are proposed.

The BOD₅ limitation is based on original modeling conducted February 1971 (**Attachment 9**).

It is staff's practice to equate the Total Suspended Solids limits with the BOD₅ limits since the two pollutants are closely related in terms of treatment of domestic sewage.

pH limitations are set at the water quality criteria.

e). Effluent Limitations and Monitoring Summary

The effluent limitations are presented in the following table. Limits were established for Flow, BOD₅, Total Suspended Solids, Ammonia as N, pH, Dissolved Oxygen and Total Residual Chlorine.

The limit for Total Suspended Solids is based on Best Professional Judgement.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/l), with the flow values (in MGD) and then a conversion factor of 3.785.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

19. Effluent Limitations/Monitoring Requirements:

Design flow is 0.0063 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS						MONITORING REQUIREMENTS	
		Monthly Average		Weekly Average		Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL		N/A		N/A	NL	1/D	Estimate
pH	3	N/A		N/A		6.0 S.U.	9.0 S.U.	1/D	Grab
BOD ₅	3,5	12 mg/L	0.30 kg/day	18 mg/L	0.40 kg/day	N/A	N/A	1/M	Grab
Total Suspended Solids (TSS)	2	12 mg/L	0.30 kg/day	18 mg/L	0.40 kg/day	N/A	N/A	1/M	Grab
DO	3	N/A		N/A		6.0 mg/L	N/A	1/D	Grab
Ammonia, as N (mg/L)	3	4.1 mg/L		4.1 mg/L		N/A	N/A	1/M	Grab
Total Residual Chlorine (after contact tank)	4	N/A		N/A		1.0 mg/L	N/A	1/D	Grab
Total Residual Chlorine (after dechlorination)	3	0.008 mg/L		0.010 mg/L		N/A	N/A	1/D	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgement
3. Water Quality Standards
4. DEQ Disinfection Guidance
5. Stream Model – **Attachment 9**

MGD = Million gallons per day.

N/A = Not applicable.

NL = No limit; monitor and report.

S.U. = Standard units.

1/D = Once every day.

1/M = Once every month.

Estimate = Based on the technical evaluation of sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

20. Other Permit Requirements:

Part I.B. of the permit contains additional chlorine monitoring requirements, quantification levels and compliance reporting instructions.

Minimum chlorine residual must be maintained at the exit of the chlorine contact tank to assure adequate disinfection. No more than three (3) of the monthly test results for TRC at the exit of the chlorine contact tank shall be <1.0 mg/L with any TRC <0.6 mg/L considered a system failure. Monitoring at numerous STPs has concluded that a TRC residual of 1.0 mg/L is an adequate indicator of compliance with the *E. coli* criteria. *E. coli* limits are defined in this section as well as monitoring requirements to take effect should an alternate means of disinfection be used.

9 VAC 25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9 VAC 25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

21. Other Special Conditions:

- a) 95% Capacity Reopener. The VPDES Permit Regulation at 9 VAC 25-31-200.B.2. requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. This facility is a POTW.
- b) O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790; VPDES Permit Regulation, 9 VAC 25-31-190.E. Before or on 28 March 2008, the permittee shall submit for approval an Operations and Maintenance (O&M) Manual or a statement confirming the accuracy and completeness of the current O&M Manual to the Department of Environmental Quality, Northern Regional Office (DEQ-NRO). Future changes to the facility must be addressed by the submittal of a revised O&M Manual within 90 days of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.
- c) CTC, CTO Requirement. The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.

- d) Licensed Operator Requirement. The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9 VAC 25-31-200 D, and Rules and Regulations for Waterworks and Wastewater Works Operators (18 VAC 160-20-10 et seq.) requires licensure of operators. This facility requires a Class IV operator.
 - e) Reliability Class. The Sewage Collection and Treatment Regulation at 9 VAC 25-790 requires sewerage works achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. The facility is required to meet reliability Class II.
 - f) Treatment Works Closure Plan. The State Water Control Law §62.1-44.15:1.1, makes it illegal for an owner to cease operation and fail to implement a closure plan when failure to implement the plan would result in harm to human health or the environment. This condition is used to notify the owner of the need for a closure plan where a facility is being replaced or is expected to close
22. Permit Section Part II. Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

23. Changes to the Permit from the Previously Issued Permit:

- a) Special Conditions:
 - The Sample Comparison special condition has been removed. The facility completed this item during the last permit and there was no significant difference between the two sampling points (**Attachment 10**).
 - The Indirect Dischargers condition was removed since there are no other connections to this treatment works.
 - The Discharge Pipe Integrity Inspection condition was removed.
 - The TMDL Reopener condition has been added with this reissuance.
- b) Monitoring and Effluent Limitations: None

24. Variances/Alternate Limits or Conditions: None

25. Public Notice Information:

First Public Notice Date: 31 October 2007 Second Public Notice Date: 7 November 2007

Public Notice Information is required by 9 VAC 25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: Northern DEQ Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3873, ddfrasier@deq.virginia.gov. See **Attachment 11** for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

26. 303 (d) Listed Stream Segments and Total Max. Daily Loads (TMDL):

The TMDL for downstream impairments has a due date of 2018. While the receiving stream will not be specifically mentioned, this facility may be given a WLA since it is upstream of the impairment.

TMDL Reopener. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL that may be developed and approved for the receiving stream.

27. Additional Comments:

Previous Board Action(s): None.

Staff Comments: None.

Public Comment: No comments were received during the public notice.

EPA Checklist: The checklist can be found in **Attachment 12**.

Fact Sheet Attachments – Table of Contents

Arcola Elementary School WWTP VA0021733 2007 Reissuance

Attachment 1	Flow Frequency Determination
Attachment 2	Facility Schematic/Diagram
Attachment 3	Topographic Map
Attachment 4	Site Inspection Report
Attachment 5	NRO Planning Memo
Attachment 6	Wasteload Allocation Analysis
Attachment 7	Effluent pH Data
Attachment 8	Chlorine Limit Calculation
Attachment 9	February 1971 Stream Model
Attachment 10	Sample Comparison Results
Attachment 11	Public Notice
Attachment 12	EPA Checklist

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION

Water Quality Assessments and Planning

629 E. Main Street

P.O. Box 10009

Richmond, Virginia 23240

SUBJECT: Flow Frequency Determination Arcola Elementary School STP — #VA0021733

TO: Doug Stockman, NRO

FROM: Paul E. Herman, P.E., WQA

DATE: July 18, 1997

COPIES: Ron Gregory, Charles Martin, File

The Arcola Elementary School STP discharges to the South Fork Broad Run near Lenah, VA. Stream flow frequencies are required at this site by the permit writer for the purpose of calculating effluent limitations for the VPDES permit.

The USGS conducted several flow measurements on the South Fork Broad Run during 1968, 1979, and 1980. The measurements were made approximately 2.0 miles downstream of the discharge point. The measurements made by the USGS correlated very well with the same day daily mean values from the continuous record gage on the Goose Creek near Leesburg, VA #01644000. The measurements and daily mean values were plotted on a logarithmic graph and a best fit line was drawn through the data points. The required flow frequencies from the reference gage were plotted on the regression line and the associated flow frequencies at the measurement site were determined from the graph.

The flow frequencies at the discharge point were determined by using the values at the measurement site and adjusting them by proportional drainage areas. The data for the reference gage, the measurement site and the discharge point are presented below:

Goose Creek near Leesburg, VA (#01644000):

	Drainage Area = 332 mi ²
1Q10 = 1.8 cfs	High Flow 1Q10 = 16 cfs
7Q10 = 2.2 cfs	High Flow 7Q10 = 24 cfs
30Q5 = 7.9 cfs	HM = 34 cfs

South Fork Broad Run at Arcola, VA (#01644255):

	Drainage Area = 5.31 mi ²
1Q10 = 0.0029 cfs	High Flow 1Q10 = 0.045 cfs
7Q10 = 0.0037 cfs	High Flow 7Q10 = 0.075 cfs
30Q5 = 0.019 cfs	HM = 0.125 cfs

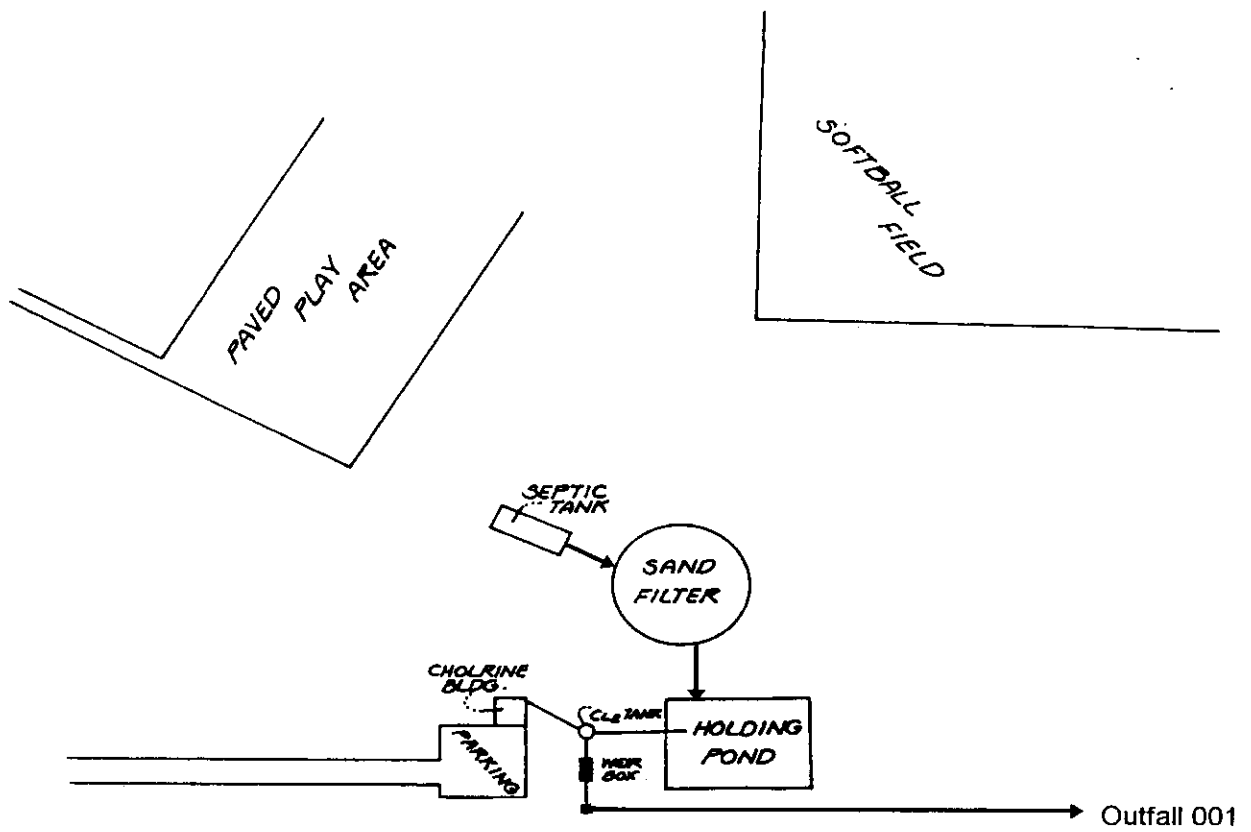
South Fork Broad Run at discharge point:

Drainage Area = 2.96 mi ²	
1Q10 = 0.0 cfs	High Flow 1Q10 = 0.025 cfs
7Q10 = 0.0 cfs	High Flow 7Q10 = 0.04 cfs
30Q5 = 0.0 cfs	HM = 0.0 cfs

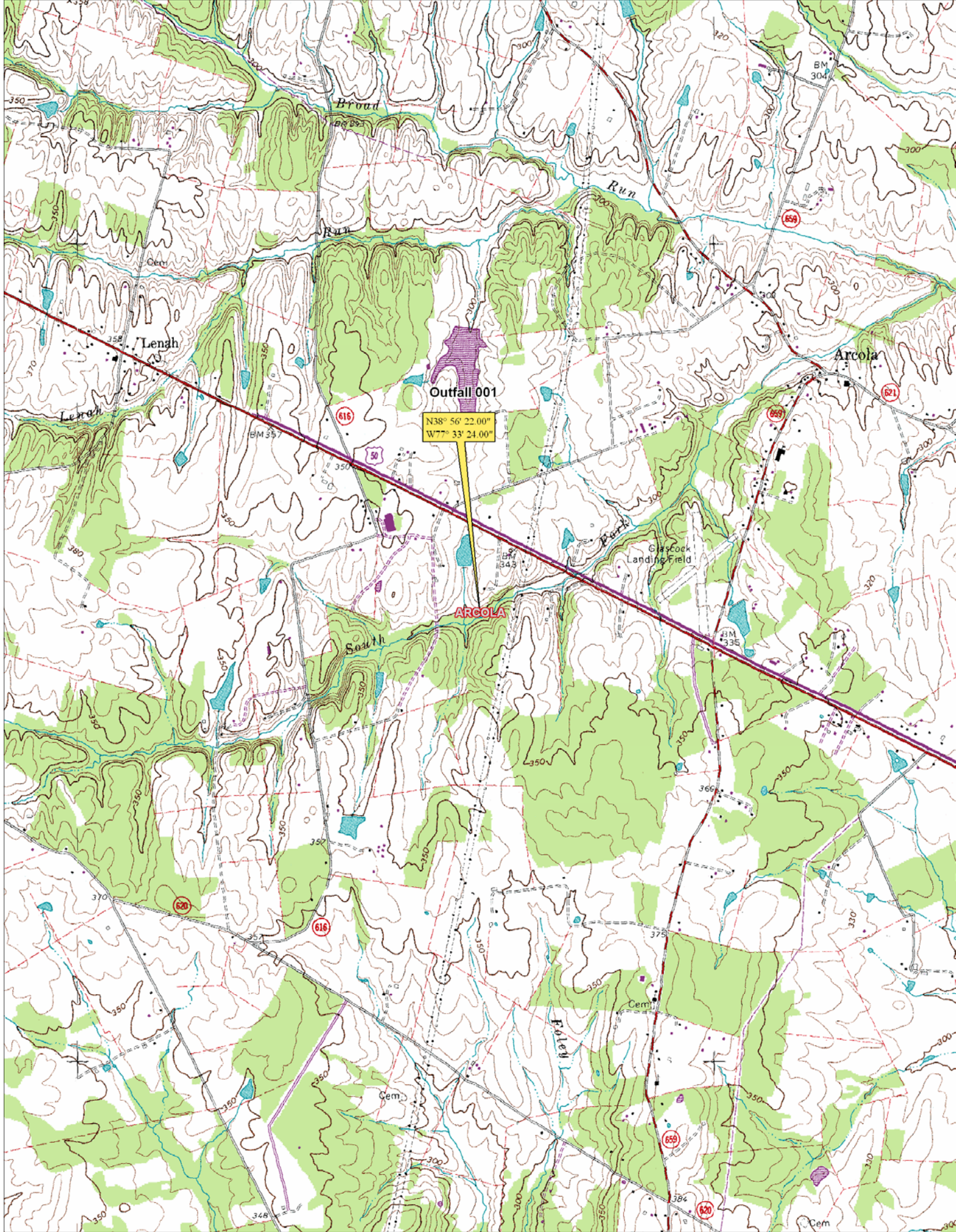
The high flow months are December through May.

This analysis assumes there are no significant discharges, withdrawals or springs influencing the flow in the South Fork Broad Run between the gage and the discharge point.

If there are any question concerning this analysis, please let me know.



ARCOLA ELEMENTARY SCHOOL





COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHERN VIRGINIA REGIONAL OFFICE

13901 Crown Court, Woodbridge, Virginia 22193

(703) 583-3800 Fax (703) 583-3801

www.deq.virginia.gov

L. Preston Bryant, Jr.
Secretary of Natural Resources

David K. Pay
Director

Jeffery A. Stetson
Regional Director

September 10, 2007

Mr. Jan Nelson, Division Manager
Loudoun County Parks Recreation & Community Services
215 Depot Court, SE, 3rd Floor
Leesburg, VA 20175

Re: Arcola Elementary School STP VA0021733

Dear Mr. Nelson:

Attached is a copy of the Site Inspection Report generated from the Facility Compliance Inspection conducted at Arcola Elementary School - Sewage Treatment Plant (STP) on August 21, 2007.

A written response concerning the items listed in the Compliance Section - Inspection Recommendations is due to this office by October 9, 2007. **Included in this response should be a plan of action and timetable for resolving these compliance issues, if they have not already been addressed.** Your response may be sent either via the US Postal Service or electronically, via E-mail. If you chose to send your response electronically, we recommend sending it as an Acrobat PDF or in a Word-compatible, write-protected format. Additional inspections may be conducted to confirm that the facility is in compliance with permit requirements.

If you have any questions or comments concerning this report, please feel free to contact me at the Northern Virginia Regional Office at (703) 583-3882 or by E-mail at smmack@deq.virginia.gov.

Sincerely,

Sharon Mack
Environmental Specialist II

cc: Permits / DMR File
Compliance Manager
Compliance Auditor
Compliance Inspector
Todd Danielson, LCSA



NORTHERN VIRGINIA REGIONAL OFFICE
13901 CROWN COURT, WOODBRIDGE, VA. 22193
PHONE: (703) 583-3870 FAX: (703) 583-3871

SITE INSPECTION REPORT

FACILITY NAME:	Arcola Elementary School STP				
PERMIT NUMBER:	VA0021733	INSPECTION DATE:	08/21/2007	REPORT DATE:	09/07/2007
INSPECTOR:	Sharon Mack	REVIEWER	<i>[Signature]</i> DATE 9/7/07		
PRESENT AT INSPECTION:	Doug Fraser -DEQ Todd Danielson, Les Morefield - LCSA Jan Nelson- Loudoun County Parks Recreation & Community Services				

Inspection Type:

<input type="checkbox"/>	Compliance	WL/NOV#:	<input type="checkbox"/>	Announced
<input type="checkbox"/>	Sampling		<input type="checkbox"/>	Scheduled
<input checked="" type="checkbox"/>	Other: Recon			

Observation Section:

- o Arrived on site 0910.
- o Weather- sunny and warm; trees and ground wet from rain overnight.
- o The plant serves only the elementary school building. This building is no longer a school, but a Recreation Center/nature center. The county's plans are to move the Rec. Center also and abandon the building within the next couple of years. The current owner is Loudoun County Parks Recreation & Community Services and the plant is operated by Loudoun County Service Authority.
- o Met Les Morefield on site and toured the facility.
- o Water from the building enters a septic tank. When a set water level is reached, it is pumped though a rotating distributor arm onto the sand filter. Effluent from the filter enters a polishing/holding pond.

- The pond is equipped with a PVC liner which has been patched in several places. There are a couple places near the top of the berm that the liner is currently torn. Given the size of the pond and the low influent flow, it is unlikely that water would reach this level. Shrubs grow down to the liner on the south side of the holding pond. Additionally, there is a large groundhog burrow under these same shrubs.
- The pond has a discharge pipe, but it has been capped and water exits the plant only when the operators decide to force a discharge by pumping water from the pond into the chlorine contact tank through a hose. The plant does not discharge every day.
- Chlorine is added at the chlorine contact tank for disinfection. The staff is no longer using bleach, but a mix of 12% hypochlorite solution in a 55 gallon drum. This solution is fed to the chlorine contact tank with a metering pump on discharge days. The drum and hypochlorite are kept inside the control building. Post air is also added at the chlorine contact tank.
- Next, the water passes over a V-notch weir, through a dechlor tablet feeder, then into the discharge pipe. Samples are collected just prior to entering the discharge pipe. Outfall 001 is about 0.4 miles away through woods.
- Met Jan Nelson and Todd Danielson (LCSA) and discussed the permit reissuance and the county's plans for the property.
- Doug, Todd, and I attempted to find Outfall 001 with no luck, although we did locate the receiving stream.
- Departed 1110.

PHOTOGRAPH LOG

- Photos were taken by Sharon Mack
- Photos can be located on the DEQ U drive @ Photos - Water Facilities – Arcola Elementary School-08-21-07.
- Photos are included with this report.

Compliance Section:

INSPECTION RECOMMENDATION(S):

- **Update the O&M Manual to reflect changes in plant operation.**

Sampling Section: NA

To: Rob Swanson
From: Douglas Frasier

Date: 2 August 2007
Subject: Planning Statement for Arcola Elementary School WWTP
VA0021733

Discharge Type: Domestic wastewater
Discharge Flow: 0.0063 MGD

Receiving Stream: South Fork Broad Run
1995 Hydraulic Unit: VAN-A09R
NWBD (6th order) Hydraulic Unit: PL17
Latitude / Longitude: 38° 56' 22" / 77° 33' 24"

1. Is there monitoring data for the receiving stream? Yes.
- If yes, please attach latest summary.

VAN-A09R_SOR01A04 South Fork Broad Run 4.96 Miles
Segment begins at the headwaters of South Fork Broad Run and continues downstream until the confluence with Broad Run.

Class III, Section 9.

DEQ ambient water quality monitoring station 1ASOR002.99, at Route 616.

The aquatic life and wildlife uses are considered fully supporting. Due to there being one exceedance in four fecal coliform and one exceedance in two E.coli bacteria sampling events, there is insufficient information to determine support for the recreation use. The fish consumption use was not assessed.

- If no, where is the nearest downstream monitoring station. NA

2. Is the receiving stream on the current 303(d) list? No.

- If yes, what is the impairment? NA

- Has the TMDL been prepared? NA

- If yes, what is the WLA for the discharge? NA

- If no, what is the schedule for the TMDL? NA

3. If the answer to (2) above is no, is there a downstream 303(d) listed impairment? Yes.

- If yes, what is the impairment?

Assessment unit VAN-A09R_BRB01A00 has multiple impairments and observed effects, which are listed below. Please note that the fish consumption advisory extends beyond the size of this particular assessment unit. The boundaries of the advisory are noted.

VAN-A09R_BRB01A00 Broad Run 2.88 Miles

Segment begins at the confluence with Beaverdam Run, approximately 0.8 river mile upstream from Route 7, and continues downstream until the confluence with the Potomac River.

Class III, Section 8, special stds. PWS.

DEQ ambient, biological, and fish tissue/ sediment station 1ABRB002.15, at Route 7. Citizen monitoring station 1ABRB-BR1-LWC.

Historical Note: This segment was included in Attachment B of the 1999 Consent Decree (Plaintiff's list of waters) for fecal coliform.

Historical Note: Mn exceeded the water quality taste and odor criteria in one of one sample in September 1998. However, this standard is now only applicable directly at the intake.

Note: For the 2006 assessment, the fecal coliform bacteria parameter is shown to be supporting for the recreation use and should be removed from the 303(d) list of waters.

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The advisory, dated 12/13/04, limits American eel consumption to no more than two meals per month. The affected area includes the following tributaries in the Potomac River basin between the VA/MD state line near the Route 340 bridge (Loudoun County) to the I-395 bridge (Arlington County); Goose Creek up to the Dulles Greenway Road Bridge, **Broad Run up to the Route 625 bridge**, Difficult Run up to the Route 7 bridge, and Pimmit Run up to the Route 309 bridge. Additionally, exceedances of the water quality criterion based tissue value (TV) of 54 parts per billion (ppb) for polychlorinated biphenyls (PCBs) in fish tissue were recorded in one species of fish samples collected in 2001 (American eel) and 2004 (American eel) and of 12 ppb for heptachlor epoxide in 2001 (American eel) at monitoring station 1ABRB002.15. Finally, there were exceedances of the risk-based tissue screening values (TSV) of 72 ppb for arsenic (As) in 2004 (American eel) and of 300 ppb for mercury (Hg) in 2004 (smallmouth bass and yellow bullheaded catfish). **The heptachlor epoxide, arsenic, and mercury exceedances were noted as observed effects for the fish consumption use.**

DEQ benthic macroinvertebrate biological monitoring finds this segment to be moderately impaired, resulting in an impaired classification for the aquatic life use. Citizen monitoring indicates a medium probability of adverse conditions for biota.

The public water supply, recreation, and wildlife uses are considered fully supporting.

Trend analysis was performed on 1ABRB002.15. No statistically significant trends were detected.

2004 TMDL ID for this segment was VAN-A09R-01. Segment was formerly identified with a bacterial impairment due to exceedances of the fecal coliform criterion, which no longer occur along this stream reach.

- Has a TMDL been prepared? No.

- Will the TMDL include the receiving stream?

While the receiving stream will not specifically be mentioned, as it is not listed as impaired, the TMDL will consider all upstream facilities.

- Is there a WLA for the discharge?

No, since a TMDL has not been initiated for either (benthic macroinvertebrates or PCBs in fish tissue) of the Broad Run impairments.

- What is the schedule for the TMDL?

Both of the above mentioned impairments have a TMDL due date of 2018.

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?
There are no additional monitoring requests at this time.

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: **Arcola Elementary School WWTP**

Permit No.: **VA0021733**

Receiving Stream: **South Fork Broad Run**

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO₃) = **50** mg/L
 90% Temperature (Annual) = **25** deg C
 90% Temperature (Wet season) = **deg C**
 90% Maximum pH = **7.6** SU
 10% Maximum pH = **SU**
 Tier Designation (1 or 2) = **1**
 Public Water Supply (PWS) Y/N? = **n**
 Trout Present Y/N? = **n**
 Early Life Stages Present Y/N? = **y**

Stream Flows

1Q10 (Annual) = **0** MGD
 7Q10 (Annual) = **0** MGD
 30Q10 (Annual) = **0** MGD
 1Q10 (Wet season) = **0** MGD
 30Q10 (Wet season) = **0** MGD
 30Q5 = **0** MGD
 Harmonic Mean = **0** MGD
 Annual Average = **0** MGD

Mixing Information

Annual - 1Q10 Mix = **100** %
 - 7Q10 Mix = **100** %
 - 30Q10 Mix = **100** %
 Wet Season - 1Q10 Mix = **100** %
 - 30Q10 Mix = **100** %

Effluent Information

Mean Hardness (as CaCO₃) = **50** mg/L
 90% Temp (Annual) = **25** deg C
 90% Temp (Wet season) = **deg C**
 90% Maximum pH = **7.4** SU
 10% Maximum pH = **SU**
 Discharge Flow = **0.0063** MGD

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenaphthene	0	--	--	na	2.7E+03	--	--	na	2.7E+03	--	--	--	--	--	--	--	--	--	--	na	2.7E+03
Acrolein	0	--	--	na	7.8E+02	--	--	na	7.8E+02	--	--	--	--	--	--	--	--	--	--	na	7.8E+02
Acrylonitrile ^C	0	--	--	na	6.6E+00	--	--	na	6.6E+00	--	--	--	--	--	--	--	--	--	--	na	6.6E+00
Aldrin ^C	0	3.0E+00	--	na	1.4E-03	3.0E+00	--	na	1.4E-03	--	--	--	--	--	--	--	--	3.0E+00	--	na	1.4E-03
Ammonia-N (mg/l) (Yearly)	0	2.30E+01	2.41E+00	na	--	2.3E+01	2.4E+00	na	--	--	--	--	--	--	--	--	--	2.3E+01	2.4E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	2.30E+01	4.73E+00	na	--	2.3E+01	4.7E+00	na	--	--	--	--	--	--	--	--	--	2.3E+01	4.7E+00	na	--
Anthracene	0	--	--	na	1.1E+05	--	--	na	1.1E+05	--	--	--	--	--	--	--	--	--	--	na	1.1E+05
Antimony	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na	4.3E+03
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene ^C	0	--	--	na	7.1E+02	--	--	na	7.1E+02	--	--	--	--	--	--	--	--	--	--	na	7.1E+02
Benzidine ^C	0	--	--	na	5.4E-03	--	--	na	5.4E-03	--	--	--	--	--	--	--	--	--	--	na	5.4E-03
Benzo (a) anthracene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (b) fluoranthene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (k) fluoranthene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (a) pyrene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Bis(2-Chloroethyl) Ether	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	--	--	na	1.4E+01
Bis(2-Chloroisopropyl) Ether	0	--	--	na	1.7E+05	--	--	na	1.7E+05	--	--	--	--	--	--	--	--	--	--	na	1.7E+05
Bromoform ^C	0	--	--	na	3.6E+03	--	--	na	3.6E+03	--	--	--	--	--	--	--	--	--	--	na	3.6E+03
Butylbenzylphthalate	0	--	--	na	5.2E+03	--	--	na	5.2E+03	--	--	--	--	--	--	--	--	--	--	na	5.2E+03
Cadmium	0	1.8E+00	6.6E-01	na	--	1.8E+00	6.6E-01	na	--	--	--	--	--	--	--	--	--	1.8E+00	6.6E-01	na	--
Carbon Tetrachloride ^C	0	--	--	na	4.4E+01	--	--	na	4.4E+01	--	--	--	--	--	--	--	--	--	--	na	4.4E+01
Chlordane ^C	0	2.4E+00	4.3E-03	na	2.2E-02	2.4E+00	4.3E-03	na	2.2E-02	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	2.2E-02
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane ^C	0	--	--	na	3.4E+02	--	--	na	3.4E+02	--	--	--	--	--	--	--	--	--	--	na	3.4E+02
Chloroform ^C	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na	2.9E+04
2-Chloronaphthalene	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na	4.3E+03
2-Chlorophenol	0	--	--	na	4.0E+02	--	--	na	4.0E+02	--	--	--	--	--	--	--	--	--	--	na	4.0E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	3.2E+02	4.2E+01	na	--	3.2E+02	4.2E+01	na	--	--	--	--	--	--	--	--	--	3.2E+02	4.2E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Copper	0	7.0E+00	5.0E+00	na	--	7.0E+00	5.0E+00	na	--	--	--	--	--	--	--	--	--	7.0E+00	5.0E+00	na	--
Cyanide	0	2.2E+01	5.2E+00	na	2.2E+05	2.2E+01	5.2E+00	na	2.2E+05	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	2.2E+05
DDD ^C	0	--	--	na	8.4E-03	--	--	na	8.4E-03	--	--	--	--	--	--	--	--	--	--	na	8.4E-03
DDE ^C	0	--	--	na	5.9E-03	--	--	na	5.9E-03	--	--	--	--	--	--	--	--	--	--	na	5.9E-03
DDT ^C	0	1.1E+00	1.0E-03	na	5.9E-03	1.1E+00	1.0E-03	na	5.9E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	5.9E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Dibenz(a,h)anthracene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Dibutyl phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
Dichloromethane (Methylene Chloride) ^C	0	--	--	na	1.6E+04	--	--	na	1.6E+04	--	--	--	--	--	--	--	--	--	--	na	1.6E+04
1,2-Dichlorobenzene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
1,3-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	2.6E+03
1,4-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	2.6E+03
3,3-Dichlorobenzidine ^C	0	--	--	na	7.7E-01	--	--	na	7.7E-01	--	--	--	--	--	--	--	--	--	--	na	7.7E-01
Dichlorobromomethane ^C	0	--	--	na	4.6E+02	--	--	na	4.6E+02	--	--	--	--	--	--	--	--	--	--	na	4.6E+02
1,2-Dichloroethane ^C	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
1,1-Dichloroethylene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
1,2-trans-dichloroethylene	0	--	--	na	1.4E+05	--	--	na	1.4E+05	--	--	--	--	--	--	--	--	--	--	na	1.4E+05
2,4-Dichlorophenol	0	--	--	na	7.9E+02	--	--	na	7.9E+02	--	--	--	--	--	--	--	--	--	--	na	7.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane ^C	0	--	--	na	3.9E+02	--	--	na	3.9E+02	--	--	--	--	--	--	--	--	--	--	na	3.9E+02
1,3-Dichloropropene	0	--	--	na	1.7E+03	--	--	na	1.7E+03	--	--	--	--	--	--	--	--	--	--	na	1.7E+03
Dieldrin ^C	0	2.4E-01	5.6E-02	na	1.4E-03	2.4E-01	5.6E-02	na	1.4E-03	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	1.4E-03
Diethyl Phthalate	0	--	--	na	1.2E+05	--	--	na	1.2E+05	--	--	--	--	--	--	--	--	--	--	na	1.2E+05
Di-2-Ethylhexyl Phthalate ^C	0	--	--	na	5.9E+01	--	--	na	5.9E+01	--	--	--	--	--	--	--	--	--	--	na	5.9E+01
2,4-Dimethylphenol	0	--	--	na	2.3E+03	--	--	na	2.3E+03	--	--	--	--	--	--	--	--	--	--	na	2.3E+03
Dimethyl Phthalate	0	--	--	na	2.9E+06	--	--	na	2.9E+06	--	--	--	--	--	--	--	--	--	--	na	2.9E+06
Di-n-Butyl Phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
2,4 Dinitrophenol	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	na	7.65E+02	--	--	na	7.7E+02	--	--	--	--	--	--	--	--	--	--	na	7.7E+02
2,4-Dinitrotoluene ^C	0	--	--	na	9.1E+01	--	--	na	9.1E+01	--	--	--	--	--	--	--	--	--	--	na	9.1E+01
Dioxin (2,3,7,8- tetrachlorodibenzo-p- dioxin) (ppq)	0	--	--	na	1.2E-06	--	--	na	na	--	--	--	--	--	--	--	--	--	--	na	na
1,2-Diphenylhydrazine ^C	0	--	--	na	5.4E+00	--	--	na	5.4E+00	--	--	--	--	--	--	--	--	--	--	na	5.4E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	2.4E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	2.4E+02
Endosulfan Sulfate	0	--	--	na	2.4E+02	--	--	na	2.4E+02	--	--	--	--	--	--	--	--	--	--	na	2.4E+02
Endrin	0	8.6E-02	3.6E-02	na	8.1E-01	8.6E-02	3.6E-02	na	8.1E-01	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	8.1E-01
Endrin Aldehyde	0	--	--	na	8.1E-01	--	--	na	8.1E-01	--	--	--	--	--	--	--	--	--	--	na	8.1E-01

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na	2.9E+04
Fluoranthene	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
Fluorene	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor ^C	0	5.2E-01	3.8E-03	na	2.1E-03	5.2E-01	3.8E-03	na	2.1E-03	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	2.1E-03
Heptachlor Epoxide ^C	0	5.2E-01	3.8E-03	na	1.1E-03	5.2E-01	3.8E-03	na	1.1E-03	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	1.1E-03
Hexachlorobenzene ^C	0	--	--	na	7.7E-03	--	--	na	7.7E-03	--	--	--	--	--	--	--	--	--	--	na	7.7E-03
Hexachlorobutadiene ^C	0	--	--	na	5.0E+02	--	--	na	5.0E+02	--	--	--	--	--	--	--	--	--	--	na	5.0E+02
Hexachlorocyclohexane																					
Alpha-BHC ^C	0	--	--	na	1.3E-01	--	--	na	1.3E-01	--	--	--	--	--	--	--	--	--	--	na	1.3E-01
Hexachlorocyclohexane																					
Beta-BHC ^C	0	--	--	na	4.6E-01	--	--	na	4.6E-01	--	--	--	--	--	--	--	--	--	--	na	4.6E-01
Hexachlorocyclohexane																					
Gamma-BHC ^C (Lindane)	0	9.5E-01	na	na	6.3E-01	9.5E-01	--	na	6.3E-01	--	--	--	--	--	--	--	--	9.5E-01	--	na	6.3E-01
Hexachlorocyclopentadiene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
Hexachloroethane ^C	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone ^C	0	--	--	na	2.6E+04	--	--	na	2.6E+04	--	--	--	--	--	--	--	--	--	--	na	2.6E+04
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	4.9E+01	5.6E+00	na	--	4.9E+01	5.6E+00	na	--	--	--	--	--	--	--	--	--	4.9E+01	5.6E+00	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	na	5.1E-02	1.4E+00	7.7E-01	na	5.1E-02	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	na	5.1E-02
Methyl Bromide	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Monochlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04
Nickel	0	1.0E+02	1.1E+01	na	4.6E+03	1.0E+02	1.1E+01	na	4.6E+03	--	--	--	--	--	--	--	--	1.0E+02	1.1E+01	na	4.6E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
N-Nitrosodimethylamine ^C	0	--	--	na	8.1E+01	--	--	na	8.1E+01	--	--	--	--	--	--	--	--	--	--	na	8.1E+01
N-Nitrosodiphenylamine ^C	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	na	1.6E+02
N-Nitrosodi-n-propylamine ^C	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	--	--	na	1.4E+01
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB-1016	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1221	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1232	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1242	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1248	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1254	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1260	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB Total ^C	0	--	--	na	1.7E-03	--	--	na	1.7E-03	--	--	--	--	--	--	--	--	--	--	na	1.7E-03

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Pentachlorophenol ^C	0	7.7E-03	5.9E-03	na	8.2E+01	7.7E-03	5.9E-03	na	8.2E+01	--	--	--	--	--	--	--	--	7.7E-03	5.9E-03	na	8.2E+01
Phenol	0	--	--	na	4.6E+06	--	--	na	4.6E+06	--	--	--	--	--	--	--	--	--	--	na	4.6E+06
Pyrene	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
Radionuclides (pCi/l except Beta/Photon)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity Beta and Photon Activity (mrem/yr)	0	--	--	na	1.5E+01	--	--	na	1.5E+01	--	--	--	--	--	--	--	--	--	--	na	1.5E+01
Strontium-90	0	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	--	--	na	4.0E+00
Tritium	0	--	--	na	8.0E+00	--	--	na	8.0E+00	--	--	--	--	--	--	--	--	--	--	na	8.0E+00
Selenium	0	--	--	na	2.0E+04	--	--	na	2.0E+04	--	--	--	--	--	--	--	--	--	--	na	2.0E+04
Silver	0	2.0E+01	5.0E+00	na	1.1E+04	2.0E+01	5.0E+00	na	1.1E+04	--	--	--	--	--	--	--	--	2.0E+01	5.0E+00	na	1.1E+04
Sulfate	0	1.0E+00	--	na	--	1.0E+00	--	na	--	--	--	--	--	--	--	--	--	1.0E+00	--	na	--
1,1,2,2-Tetrachloroethane ^C	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Tetrachloroethylene ^C	0	--	--	na	1.1E+02	--	--	na	1.1E+02	--	--	--	--	--	--	--	--	--	--	na	1.1E+02
Thallium	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Toluene	0	--	--	na	6.3E+00	--	--	na	6.3E+00	--	--	--	--	--	--	--	--	--	--	na	6.3E+00
Total dissolved solids	0	--	--	na	2.0E+05	--	--	na	2.0E+05	--	--	--	--	--	--	--	--	--	--	na	2.0E+05
Toxaphene ^C	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Tributyltin	0	7.3E-01	2.0E-04	na	7.5E-03	7.3E-01	2.0E-04	na	7.5E-03	--	--	--	--	--	--	--	--	7.3E-01	2.0E-04	na	7.5E-03
1,2,4-Trichlorobenzene	0	4.6E-01	6.3E-02	na	--	4.6E-01	6.3E-02	na	--	--	--	--	--	--	--	--	--	4.6E-01	6.3E-02	na	--
1,1,2-Trichloroethane ^C	0	--	--	na	9.4E+02	--	--	na	9.4E+02	--	--	--	--	--	--	--	--	--	--	na	9.4E+02
Trichloroethylene ^C	0	--	--	na	4.2E+02	--	--	na	4.2E+02	--	--	--	--	--	--	--	--	--	--	na	4.2E+02
2,4,6-Trichlorophenol ^C	0	--	--	na	8.1E+02	--	--	na	8.1E+02	--	--	--	--	--	--	--	--	--	--	na	8.1E+02
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	6.5E+01	--	--	na	6.5E+01	--	--	--	--	--	--	--	--	--	--	na	6.5E+01
Vinyl Chloride ^C	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Zinc	0	--	--	na	6.1E+01	--	--	na	6.1E+01	--	--	--	--	--	--	--	--	--	--	na	6.1E+01
	0	6.5E+01	6.6E+01	na	6.9E+04	6.5E+01	6.6E+01	na	6.9E+04	--	--	--	--	--	--	--	--	6.5E+01	6.6E+01	na	6.9E+04

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	4.3E+03
Arsenic	9.0E+01
Barium	na
Cadmium	3.9E-01
Chromium III	2.5E+01
Chromium VI	6.4E+00
Copper	2.8E+00
Iron	na
Lead	3.4E+00
Manganese	na
Mercury	5.1E-02
Nickel	6.8E+00
Selenium	3.0E+00
Silver	4.2E-01
Zinc	2.6E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Arcola Elementary School WWTP
VA00217333

Effluent pH Data

Date		Minimum	Maximum
4-Feb-00	PH	7	7.4
9-Mar-00	PH	7	7.5
5-Apr-00	PH	7	7.4
4-May-00	PH	7	7.5
7-Jun-00	PH	7.1	7.4
10-Jul-00	PH	7	7.4
6-Oct-00	PH	7	7.4
7-Nov-00	PH	6.7	7.1
7-Dec-00	PH	6.6	7
8-Jan-01	PH	6.6	7
7-Feb-01	PH	6.5	7
7-Mar-01	PH	6.6	7
5-Apr-01	PH	6.7	7
7-May-01	PH	6.7	7
7-Jun-01	PH	6.6	7
5-Jul-01	PH	6.6	7
9-Oct-01	PH	6.7	7
8-Nov-01	PH	6.6	7
10-Dec-01	PH	6.6	6.9
9-Jan-02	PH	6.6	6.9
8-Feb-02	PH	6.7	7
7-Mar-02	PH	6.6	7
4-Apr-02	PH	6.6	7
6-May-02	PH	6.6	7
10-Jun-02	PH	6.6	7
9-Jul-02	PH	6.6	7
4-Oct-02	PH	6.6	6.9
7-Nov-02	PH	6.6	7
6-Dec-02	PH	6.6	6.9
6-Jan-03	PH	6.6	7
6-Feb-03	PH	6.7	7
7-Apr-03	PH	6.6	7
7-May-03	PH	6.6	7
9-Jun-03	PH	6.6	7
9-Jul-03	PH	6.6	7
8-Oct-03	PH	6.6	7
7-Nov-03	PH	6.6	7
5-Dec-03	PH	6.6	7
7-Jan-04	PH	6.6	7
9-Feb-04	PH	6.7	7
5-Mar-04	PH	6.7	7
8-Apr-04	PH	6.6	7
6-May-04	PH	6.6	7
7-Jun-04	PH	6.6	7
8-Jul-04	PH	6.7	7

7-Oct-04	PH	6.7	7
5-Nov-04	PH	6.6	7
6-Dec-04	PH	6.6	7
5-Jan-05	PH	6.6	7
7-Feb-05	PH	6.7	7
7-Mar-05	PH	6.6	7
7-Apr-05	PH	6.6	7
5-May-05	PH	6.6	7
8-Jun-05	PH	6.6	6.9
11-Jul-05	PH	6.6	7
8-Jun-06	PH	6.6	6.8
10-Jul-06	PH	6.5	6.8
7-Aug-06	PH	6.6	6.8
12-Oct-06	PH	6.7	7
8-Nov-06	PH	6.6	6.9
8-Dec-06	PH	6.5	7.6
10-Jan-07	PH	6.4	7.6
10-Apr-07	PH	6.4	7.2

90th Percentile: 6.9 7.4

Facility = Arcola Elementary
Chemical = Chlorine
Chronic averaging period = 4
WLAa = 0.019
WLAc = 0.011
Q.L. = .1
samples/mo. = 29
samples/wk. = 7

Summary of Statistics:

observations = 1
Expected Value = 20
Variance = 144
C.V. = 0.6
97th percentile daily values = 48.6683
97th percentile 4 day average = 33.2758
97th percentile 30 day average = 24.1210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 1.60883226245855E-02
Average Weekly limit = 9.8252545713861E-03
Average Monthly Limit = 7.99700209309788E-03

0.0116 mg/L
0.0098 mg/L
0.008 mg/L

The data are:

SUBJECT: Loudoun County; Arcole School Sewage Treatment Plant

TO: File

FROM: C. W. Maus

DATE: February 16, 1971
(Typed 10 March 1971)

COPIES:

STREAM SANITATION ANALYSIS

PROPOSED DISCHARGE

Process:

Hydraulic Load	0.0063	MGD	
Raw Sewage BOD ₅	240	mg/l;	
Degree of Treatment	95	% including holding pond	1b/day
Final Effluent BOD ₅	12	mg/l;	

RECEIVING STREAM

Name: Unnamed tributary to Broad Run

Basin: Potomac

Section: 9

Stream Uses: Waters generally satisfactory for use as public or municipal water supply, primary - secondary contact recreation, propagation of fish and other aquatic life and other beneficial uses.

Stream Standards: Non-degradation

Minimum D. O. _____ mg/l

pH Range _____

Maximum Temperature _____ °F

Coliform Organisms Fecal coliforms not to exceed a log mean of 1000/100 ml. Not to equal or exceed 2000/100 ml. in more than 10% of samples. Fecal coliforms within a 30-day period not to exceed a log mean of 200/100 ml. Not more than 10% of samples within a 30-day period will exceed 400/100 ml.

Other

Drainage area above point of discharge 3.15 square miles

Minimum mean seven consecutive day discharge with a ten year recurrence

interval 0.022 CFS. (Based on a critical discharge of 0.007 cfs/si
at the gaging station Goose Creek @ Leesburg).Stream miles to next major tributary 2.4 milesMean stream bed slope 0.00355 f/fMean stream depth 0.25 fMean stream width 1.5 f

Comments (nature of stream, etc.)

Inspection 26 January 1971 - sandy bottom; mainly narrow channel with some pooling.

MEMORANDUM

State Water Control Board

4010 WEST BROAD STREET

P. O. Box 11143

RICHMOND, VA. 232

SUBJECT: Loudoun County; Arcola School Sewage Treatment Plant

TO: File

FROM: C. W. Maus

DATE: 16 February 1971
(Typed 10 March 1971)

COPIES:

DRAINAGE AREA -

Area generally overgrown field land; some grazing - background BOD₅ - 2 mg/l

Drainage area above discharge - 3.15 sq. miles

Receiving stream - 2.4 miles above confluence with Broad Run

Elevation of discharge = 300 ft. above sea level

Elevation of Broad Run Confluence - 255 ft. above sea level

Average stream bed gradient = 45

$$5280 \times 24 = 0.00355 \text{ ft/ft.}$$

Nature of stream - narrow channel with small pooling

Critical discharge = 0.007 cfs/sq. mi. (Goose Creek near Leesburg) =

$$3.15 \times 0.007 = 0.02205 \text{ cfs} = 0.022 \times 0.686 = 0.0151 \text{ mgd}$$

Discharge flow = 6300 gpd = 0.0063 mgd

T = 29°C

$$K_d = 0.23 (20^\circ\text{C}) \times (1.047)^9 = 0.35$$

$$K_r = 0.23 (20^\circ\text{C}) \times (1.047)^9 = 0.35$$

Manning Equation -

$$V = \frac{1.49}{n} (s) \frac{1}{2} (R_H)^{2/3}$$

Depth = 0.25 ft. (nominal)

$$V = (30)(0.0035) \frac{1}{2} (0.25)^{2/3}$$

$$V = (30)(0.06)(0.4) = 0.72 \text{ ft/sec}$$

$$K_a = 3.3 \frac{V}{H^{1.33}} = (3.3)(0.72)/(0.25)^{1.33} \text{ to high use } 1.2$$

$$K_a = 1.2 (20^\circ\text{C}) \times (1.016)^9 = 1.37$$

Time to Broad Run

$$t = \frac{(5280)(2.4)}{(0.72)(3600)(24)} = 0.21 \text{ days}$$

Continued Page 2 --

$$D_a = 7.5 \text{ mg/l} \quad D_a = 90\% D_a = 6.75$$

$$t_c = \frac{1}{K_a - K_r} \log_e \frac{K_a}{K_r} \left[1 - D_a \frac{(K_d - K_r)}{L_a K_d} \right]$$

$$L_{(mix)} = \frac{(240)(90.1)(6.3) + (2)(15)}{6.3 + 15} = \frac{151 + 30}{21.3} = 8.5$$

$$L_a = 8.5 \times 1.3 = 11 \text{ mg/l}$$

$$t_c = \frac{1}{1.37 - 0.35} \log_e \frac{1.37}{0.35} \left[1 - 0.75 \frac{(1.37 - 0.35)}{(11)(0.35)} \right]$$

$$t_c = \frac{1}{1.02} \log_e 3.9 \left(1 - \frac{0.75}{3.86} \right)$$

$$= 0.98 \log_e 3.9 (1 - 0.194) = 0.98 \log_e 3.14$$

$$= (0.98)(1.14) = 1.12 \text{ days}$$

Thus sag will occur in Broad Run or Goose Creek

Deficit to Broad Run @ 90% BOD₅ removal

$$C = C_s - \frac{K_d C_o}{K_a - K_r} \left(e^{-K_r t} - e^{-K_a t} \right) - \left(C_s - C_o \right) e^{-K_a t}$$

$$C = 7.5 - \frac{(0.35)(11)}{(1.37 - 0.35)} \left(e^{-(0.35)(0.21)} - e^{-(1.37)(0.21)} \right) - (0.75) e^{-(1.37)(0.21)}$$

$$C = 7.5 - 3.77 \left(e^{\frac{1}{0.0735}} - e^{\frac{1}{0.28}} \right) - 0.75 \left(\frac{1}{e^{0.28}} \right)$$

$$C = 7.5 - 3.77 \left(\frac{1}{1.075} - \frac{1}{1.325} \right) - 0.75 \left(\frac{1}{1.325} \right)$$

$$C = 7.5 - 0.66 - 0.56 = 7.5 - 1.22 = 6.28 \text{ mg/l}$$

Deficit to Broad Run @ 95% BOD₅ removal

$$L_o = \left[\frac{(240)(0.05)(6.3) + (2)(15)}{21.3} \right] 1.3 = 6.3 \text{ mg/l}$$

$$C = 7.5 - \frac{6.3}{11} (0.66) - 0.56 = 7.5 - 0.375 - 0.560$$

Continued Page 3 --

At 95% BOD₅ removal the O₂ demand on the stream will be 0.375 mg/l at the confluence of Broad Run. This should be satisfactory although it is greater than the 0.2 mg/l normally allowed because:

1. The drought flow basis is lower than generally allowed, thereby presenting a probable conservative drought flow;
2. Additional drainage feeds into the receiving stream that is not considered in the model; and
3. The proposed facility is an elementary school which will not subject the system to heavy loadings during most of the summer months.

CWM:nb



ENVIRONMENTAL SYSTEMS SERVICE, LTD.

Page: 1

Work Order #: 28272

Contract #: 02/4

Customer #: 1597

Customer PO #: NONE

LOUDOUN COUNTY SCHOOLS

ATTN: MR. TOM FIELDS

1002C SYCOLIN RD.

LEESBURG, VA 20175

Job Location: ARCOLA ELEMENTARY

Collected by: CLIENT

Date Received: 04/02/2003

ANALYSIS REPORT

TAG #: 15852
SAMPLE POINT: D-CHLOR CHAMBER

SAMPLE DATE:
04/01/2003

Description	Result	Unit	Rpt. Limit	Method	Anlys Date	Time	Init
Biochemical Oxygen Demand	2	mg/l	2	SM 5210	04/02/03	15:51	TA
Total Suspended Solids	2.30	mg/l	1.00	SM 2540D	04/02/03	16:50	JI
Ammonia, as N	0.16	mg/l	0.10	SM 4500NH3D	04/08/03		PH

TAG #: 15853
SAMPLE POINT: OUTFALL #001

SAMPLE DATE:
04/01/2003

Description	Result	Unit	Rpt. Limit	Method	Anlys Date	Time	Init
Biochemical Oxygen Demand	<2	mg/l	2	SM 5210	04/02/03	15:51	TA
Total Suspended Solids	1.50	mg/l	1.00	SM 2540D	04/07/03	12:20	JI
Ammonia, as N	0.16	mg/l	0.10	SM 4500NH3D	04/08/03		PH

Reviewed by:


ESS LAB SERVICES

Report Date: April 10, 2003
VA LAB ID# 00115



ENVIRONMENTAL SYSTEMS SERVICE, LTD.

Page: 1

Work Order #: 33591
Contract #: 03/4
Customer #: 1597
Customer PO #: NONE

LOUDOUN COUNTY SCHOOLS
ATTN: MR. TOM FIELDS
1002C SYCOLIN RD.
LEESBURG, VA 20175

Job Location: ARCOLA ELEMENTARY
Collected by: CLIENT
Date Received: 10/07/2003

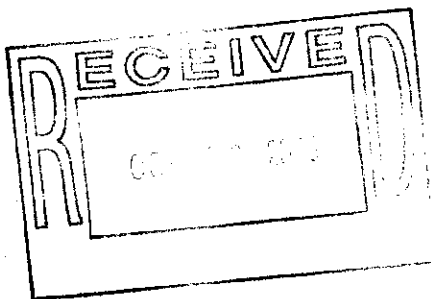
ANALYSIS REPORT

TAG #: 21148 SAMPLE POINT: FINAL EFFLUENT / D-CHLOR TANK SAMPLE DATE: 10/06/2003

Description	Result	Unit	Rpt. Limit	Method	Anlys Date	Time	Ini
Biochemical Oxygen Demand	3	mg/l	2	SM 5210	10/07/03	14:52	TA
Total Suspended Solids	<1.00	mg/l	1.00	SM 2540D	10/08/03	14:20	JI
Ammonia, as N	<0.10	mg/l	0.10	SM 4500NH3D	10/13/03	10:00	TA

TAG #: 21149 SAMPLE POINT: FINAL EFFL./STREAM OUTFALL 001 SAMPLE DATE: 10/06/2003

Description	Result	Unit	Rpt. Limit	Method	Anlys Date	Time	Ini
Biochemical Oxygen Demand	<2	mg/l	2	SM 5210	10/07/03	14:45	TA
Total Suspended Solids	<1.00	mg/l	1.00	SM 2540D	10/08/03	13:45	JI
Ammonia, as N	<0.10	mg/l	0.10	SM 4500NH3D	10/13/03	10:00	TA



Reviewed by:

James G. [Signature]
ESS LAB SERVICES

Report Date: October 15, 2003
VA LAB ID# 00115



ENVIRONMENTAL SYSTEMS SERVICE, LTD.

Page: 1

Work Order #: 38751
Contract #: 03/4
Customer #: 1597
Customer PO #: NONE

LOUDOUN COUNTY SCHOOLS
ATTN: MR. TOM FIELDS
1002C SYCOLIN RD.
LEESBURG, VA 20175

Job Location: ARCOLA ELEMENTARY
Collected by: CLIENT
Date Received: 04/02/2004

ANALYSIS REPORT

TAG #: 26301 SAMPLE POINT: FINAL EFFLUENT-DCHLOR TANK SAMPLE DATE: 04/01/2004

Description	Result	Unit	Rpt. Limit	Method	Anlys Date	Time	Init
Biochemical Oxygen Demand	7	mg/l	2	SM 5210	04/02/04	14:44	TA
Total Suspended Solids	<1.00	mg/l	1.00	SM 2540D	04/02/04	16:45	JI
Ammonia, as N	0.20	mg/l	0.10	SM 4500NH3D	04/06/04	10:00	TA

TAG #: 26302 SAMPLE POINT: FINAL EFFL.-OUTFALL 001 STREAM SAMPLE DATE: 04/01/2004

Description	Result	Unit	Rpt. Limit	Method	Anlys Date	Time	Init
Biochemical Oxygen Demand	5	mg/l	2	SM 5210	04/02/04	14:48	TA
Total Suspended Solids	<1.00	mg/l	1.00	SM 2540D	04/02/04	16:45	JI
Ammonia, as N	0.22	mg/l	0.10	SM 4500NH3D	04/06/04	10:00	TA

Reviewed by:


ESS LAB SERVICES

Report Date: April 12, 2004
VA LAB ID# 00115



Environmental Systems Service, Ltd.

ENVIRONMENTAL SYSTEMS SERVICE, LTD.

Page: 1

Work Order #: 44492
Contract #: 04/4
Customer #: 1597
Customer PO #: ARCOLA ELEMENTARY

LOUDOUN COUNTY SCHOOLS
ATTN: MR. TOM FIELDS
1002C SYCOLIN RD.
LEESBURG, VA 20175

Job Location: ARCOLA ELEMENTARY
Collected by: CLIENT
Date Received: 12/08/2004

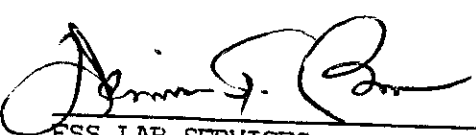
ANALYSIS REPORT

TAG #: 33871
SAMPLE POINT: FINAL EFFLUENT - D'CHLOR TANK

SAMPLE DATE:
10/07/2004

Description	Result	Unit	Rpt. Limit	Method	Anlys Date	Time	Ini
Biochemical Oxygen Demand	4	mg/l	2	SM 5210	10/08/04	14:50	TA
Total Suspended Solids	3.20	mg/l	1.00	SM 2540D	10/12/04	14:45	JI
Ammonia, as N	0.65	mg/l	0.10	SM 4500NH3D	10/13/04		PH

Reviewed by:


ESS LAB SERVICES

Report Date: October 18, 2004
VA LAB ID#: 00115



Environmental Systems Service, Ltd.

ENVIRONMENTAL SYSTEMS SERVICE, LTD.

Page: 1

Work Order #: 44493
Contract #: 04/4
Customer #: 1597
Customer PO #: ARCOLA ELEMENTARY

LOUDOUN COUNTY SCHOOLS
ATTN: MR. TOM FIELDS
1002C SYCOLIN RD.
LEESBURG, VA 20175

Job Location: ARCOLA ELELEMENTARY
Collected by: CLIENT
Date Received: 10/08/2004

ANALYSIS REPORT

TAG #: 33872
SAMPLE POINT: FINAL EFFLUENT-OUTFALL STREAM
SAMPLE DATE: 10/07/2004

Description	Result	Unit	Rpt. Limit	Method	Anlys Date	Time	Ini
Biochemical Oxygen Demand	3	mg/l	2	SM 5210	10/08/04	14:53	TA
Total Suspended Solids	3.50	mg/l	1.00	SM 2540D	10/12/04	14:45	JI
Ammonia, as N	0.44	mg/l	0.10	SM 4500NH3D	10/13/04		PH

Reviewed by:

ESS LAB SERVICES

Report Date: October 18, 2004
VA LAB ID# 00115

Citizens may comment on the proposed reissuance of a permit that allows the release of treated wastewater into a water body in Loudoun County, Virginia

PUBLIC COMMENT PERIOD: November 1, 2007 to 5:00 p.m. on December 4, 2007

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater owners or operators of municipal facilities that discharge or propose to discharge wastewater into the streams, rivers or bays of Virginia from a point source must apply for this permit. In general, point sources are fixed sources of pollution such as pipes, ditches or channels. The applicant must submit the application to the Department of Environmental Quality, under the authority of the State Water Control Board.

PURPOSE OF NOTICE: To invite the public to comment on the draft permit.

NAME, ADDRESS AND PERMIT NUMBER OF APPLICANT: Loudoun County Parks Recreation & Community Services
215 Depot Court, SE, 3rd Floor, Leesburg, VA 20175
VA0021733

NAME AND ADDRESS OF FACILITY: Arcola Elementary School
24328 Goshen Road, Aldie, VA 20105

Project description: Loudoun County Sanitation Authority has applied for a reissuance of a permit for Arcola Elementary in Loudoun County, Virginia. The applicant proposes to release treated sewage at a rate of 0.0063 Million Gallons per Day into the South Fork Broad Run in Loudoun County that is in the Potomac River watershed. A watershed is the land area drained by a river and its incoming streams. There is no sludge generated at this facility. The permit will limit the following pollutants to amounts that protect water quality: flow, pH, BOD, Chlorine, Total Suspended Solids, DO and Ammonia as N

How a decision is made: After public comments have been considered and addressed by the permit or other means, DEQ will make the final decision unless there is a public hearing. DEQ may hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the proposed permit. If there is a public hearing, the State Water Control Board will make the final decision.

HOW TO COMMENT: DEQ accepts comments by e-mail, fax or postal mail. All comments must be in writing and be received by DEQ during the comment period. The public also may request a public hearing.

WRITTEN COMMENTS MUST INCLUDE:

1. The names, mailing addresses and telephone numbers of the person commenting and of all people represented by the citizen.
2. If a public hearing is requested, the reason for holding a hearing, including associated concerns.
3. A brief, informal statement regarding the extent of the interest of the person commenting, including how the operation of the facility or activity affects the citizen.

TO REVIEW THE DRAFT PERMIT AND APPLICATION: The public may review the documents at the DEQ-Northern Regional Office every work day by appointment.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION:

Name: Douglas Frasier

Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193

Phone: (703) 583-3873 E-mail: ddfrasier@deq.virginia.gov Fax: (703) 583-3841

Revised 2/2003

**State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review**

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name:	Arcola Elementary School WWTP
NPDES Permit Number:	VA0021733
Permit Writer Name:	Douglas Frasier
Date:	18 September 2007

Major []

Minor [X]

Industrial []

Municipal [X]

I.A. Draft Permit Package Submittal Includes:

	Yes	No	N/A
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?	X		
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?			X
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?	X		
8. Whole Effluent Toxicity Test summary and analysis?			X
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics

	Yes	No	N/A
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet or permit contain a description of the wastewater treatment process?	X		
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		X	
5. Has there been any change in streamflow characteristics since the last permit was developed?		X	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the fact sheet or permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?		X	
a. Has a TMDL been developed and approved by EPA for the impaired water?			X
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?			X
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?			X
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water?		X	

I.B. Permit/Facility Characteristics – cont.	Yes	No	N/A
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		X	
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?		X	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		X	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	X		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Checklist – for POTWs (To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether “antibacksliding” provisions were met for any limits that are less stringent than those in the previous NPDES permit?			X

II.C. Technology-Based Effluent Limits (POTWs)	Yes	No	N/A
1. Does the permit contain numeric limits for <u>ALL</u> of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	X		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	X		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			X
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	X		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	X		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		X	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			X

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?			X
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a “reasonable potential” evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the “reasonable potential” evaluation was performed in accordance with the State’s approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have “reasonable potential”?	X		
d. Does the fact sheet indicate that the “reasonable potential” and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?			X
e. Does the permit contain numeric effluent limits for all pollutants for which “reasonable potential” was determined?	X		

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the record indicate that an “antidegradation” review was performed in accordance with the State’s approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?		X	
4. Does the permit require testing for Whole Effluent Toxicity?			X

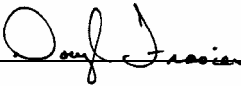
II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?			X
2. Does the permit include appropriate storm water program requirements?			X

II.F. Special Conditions – cont.	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?	X		
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?			X
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?		X	
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?		X	
a. Does the permit require implementation of the “Nine Minimum Controls”?			X
b. Does the permit require development and implementation of a “Long Term Control Plan”?			X
c. Does the permit require monitoring and reporting for CSO events?			X
7. Does the permit include appropriate Pretreatment Program requirements?			X

II.G. Standard Conditions		Yes	No	N/A
1. Does the permit contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?		X		
List of Standard Conditions – 40 CFR 122.41				
Duty to comply	Property rights	Reporting Requirements		
Duty to reapply	Duty to provide information	Planned change		
Need to halt or reduce activity	Inspections and entry	Anticipated noncompliance		
not a defense	Monitoring and records	Transfers		
Duty to mitigate	Signatory requirement	Monitoring reports		
Proper O & M	Bypass	Compliance schedules		
Permit actions	Upset	24-Hour reporting		
		Other non-compliance		
2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?			X	

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	<u>Douglas Frasier</u>
Title	<u>Environmental Specialist II</u>
Signature	<u></u>
Date	<u>18 September 2007</u>